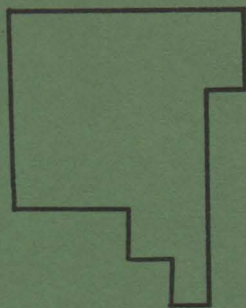
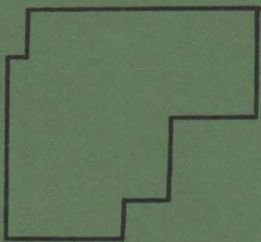


# SPRUCE BUDWORM DEFOLIATION

1974



## CHEQUAMEGON NATIONAL FOREST



Cover Map    Outline of the Chequamegon National Forest showing  
aerial survey flight lines.

- General areas of observed defoliation
- ▲ General location of ground survey plots



Spruce Budworm Survey  
Results - 1974  
Chequamegon National Forest

INTRODUCTION

In 1973 the Hayward R.D. reported severe defoliation by spruce budworm was occurring in several white spruce plantations and in balsam fir in one of the two major white-tailed deer winter yarding areas. Results of the aerial survey showed moderate to heavy defoliation on the spruce, and severe defoliation on the fir areas. An egg mass survey indicated a potential high population of budworm in 1974 (Report S-8-73).

Of particular concern again this year is the continuing defoliation and tree mortality in a deer yarding area of approximately 1500 gross acres, and the white spruce plantations which have severe defoliation for the second year.

SURVEYS

Aerial - A standard sketch mapping survey was completed in early July. Areas of moderate to severe defoliation of fir and spruce were mapped. Personnel from the Forest<sup>1/</sup> accompanied Glen Erickson<sup>2/</sup> on this survey. Flight lines and general areas of defoliation observed are shown on the Report cover.

Each ground survey plot consisted of three 15 inch terminal branch tips from the mid-crown level of each of three sample trees. The sample trees were selected as representative of tree defoliation in the vicinity of the sample plot.

The defoliation classes are:

<u>Defoliation</u>	<u>Description</u>	<u>Class</u>
0-5%	None	0
6-25%	Light	1
26-50%	Moderate	2
51-75%	Heavy	3
76-100%	Severe	4

Defoliation on each sample branch was classed, then these classes averaged to determine an overall plot defoliation class.

---

<sup>1/</sup>D. Kick, Hayward R.D.

D. Richard

T. Smith, RM. S.O.

K. Shalda, TM. S.O.

<sup>2/</sup>Now Biological Technician, North Central Forest Experiment Station, St. Paul, Minnesota



## RESULTS AND DISCUSSION

Moths were very numerous and active during the first week of the egg-mass survey and egg deposition still underway (Plots 1-6). A week later, during the completion of the survey, moths, while still present, were less numerous. Egg deposition was probably nearly completed and hatched egg masses were common (Plots 7-11).

Approximately 12,500 acres were observed containing defoliated stands during the aerial survey. Of this gross acreage, about 3,600 acres (28.8%) are classed as spruce-fir type.

Maps 1-5 show the defoliated areas detected by the aerial survey. Ground checks indicate severe defoliation (Class 4) occurs within all areas in varying sized pockets surrounded by more lightly defoliated areas (Classes 2 & 3).

Table 1. Spruce budworm egg mass counts and defoliation class for sample plots - Chequamegon N.F. - 1974.

Plot No. and Location	Tree Species	Total No. Egg Mass/ 9 Branches	Defoliation Class
1. Map #3 Compart. 7	B.F.	4	4
2. Map #3 Compart. 8	B.F.	11	4
3. Map #3 Compart. 10 (North)	B.F.	4	2
4. Map #3 Compart. 10 (South)	B.F.	3	2
5. Map #1 Compart. 80	B.F.	10	3
6. Map #1 Compart. 80	B.F.	36	4
7. Not Mapped F.R. 166	W.S.	0	1
8. Not Mapped F.R. 166	W.S.	0	1
9. Map #2 Compart. 159	W.S.	37	3
10. Map #2 Compart. 159	W.S.	15	3
11. Map #2 Compart. 146	W.S.	20	3



The egg mass data for plots 1-4 (Washburn R.D.), while not high, probably represent an ascending population. Also, these plots were sampled during the oviposition period. Some additional egg laying may have occurred following the survey. This area was not surveyed for egg masses in 1973. Severely defoliated areas are relatively small within the overall spruce-fir type.

Balsam fir, especially on Plots 5 & 6 (Hayward R.D.) have suffered severe defoliation for at least two successive seasons (1973 and 1974). Almost complete mortality of dominant and co-dominant fir can be expected in these stands.

Stands represented by Plots 7 & 8 (Glidden R.D.) had no egg masses found in samples taken during the survey. Only very light defoliation was observed on the sample branches. Populations may expand in this area in 1975.

White spruce (Plots 9, 10, and 11) plantations (Hayward R.D.) samples showed heavy defoliation in 1974. Egg mass populations are high but generally lower than in 1973. Defoliation can be expected to be heavy to severe in 1975. This will cause some reduction in growth rate which will continue for several years following cessation of budworm defoliation.

#### RECOMMENDATIONS

1. Balsam fir in Compartments 67 and 80 should be considered for a salvage cutting program this fall and winter.
2. White spruce plantations in Compartments 145, 146, and 159 should be considered for chemical suppression in 1975.
3. Surveillance by Forest personnel is encouraged to report outbreak areas in 1975 to FPM. A continuing aerial and ground evaluation surveys program will be conducted by FPM in 1975.

A. R. HASTINGS  
Entomology Section Head

KEITH E. HANSON  
Technician

Map 1 Aerially observed spruce budworm defoliation in moderate to severe classes on the Hayward Ranger District, 1974.  
(T42N R5W ; T42N R6W ; T43N R5W & T43N R6W)

\\\\\\ Defoliated areas

//// Harvested Areas

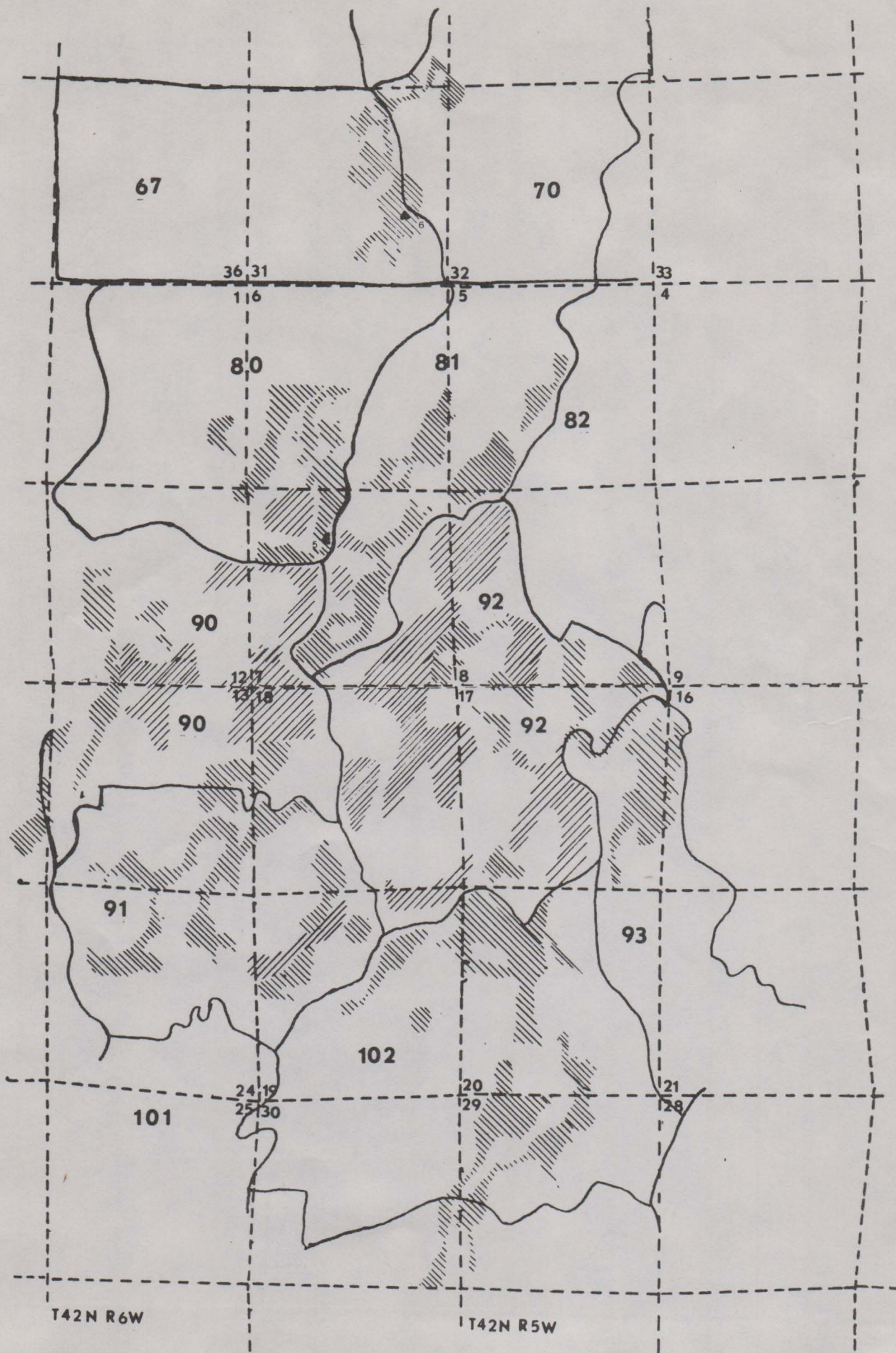
▲ o Ground survey plot locations

———○ Forest compartments

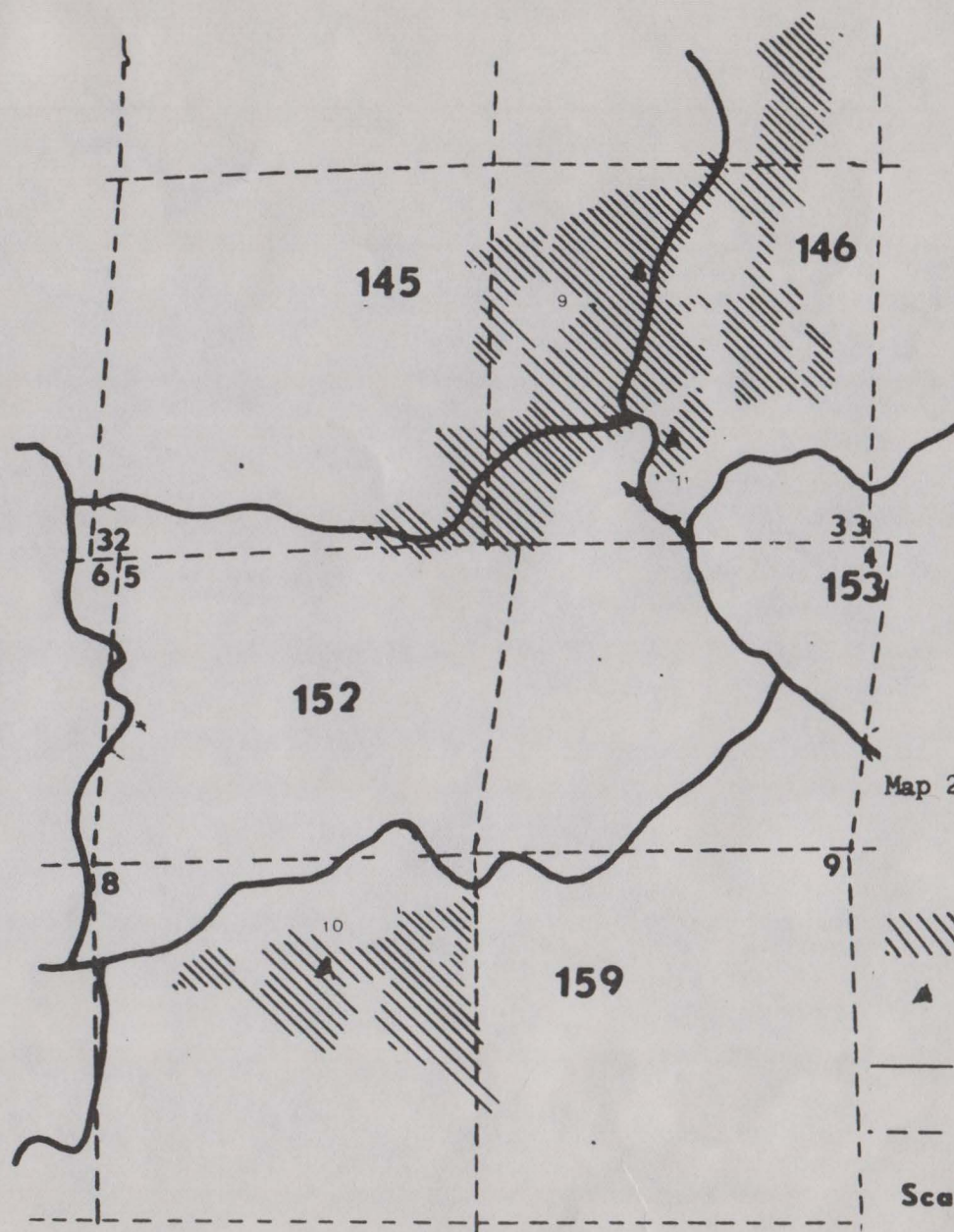
---○ Section lines

Scale: 2" = 1 mile



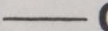
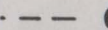








Map 2 White spruce with aerially observed  
spruce budworm defoliation, Hayward  
Ranger District, 1974.  
(T40N R5W & T 41N R5W)

-  Defoliated areas
-  Ground survey plot locations
-  Forest compartments
-  Section lines

Scale: 2" = 1 mile



Map 3. Aerially observed spruce budworm defoliation in the moderate to severe classification on the Washburn Ranger District (T 44N, R8W) 1974.

